

APPLICANT(S): AHARON, Refael  
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### **REMARKS**

The present response is intended to be fully responsive to all points of objection and/or rejection raised by the Examiner and is believed to place the application in condition for allowance. Favorable reconsideration and allowance of the application is respectfully requested.

Applicants assert that the present invention is new, non-obvious and useful. Prompt consideration and allowance of the claims is respectfully requested.

### **Status of Claims**

Claims 1-36 are pending in the application.

Claims 1, 2, 3, 5, 14, 17, 19, 20, 21, 26, 29, and 31 are amended. Claim 18 is canceled. Applicants respectfully assert that no new matter has been added.

Claims 14 and 31 are amended to recite "alignment" in place of "orientation" to provide further antecedent basis to the claims.

Claim 17 is amended to recite "a further process of mechanical and/or chemical and/or biological delignification" to place the claim in better form.

Claims 14, 19 and 29 are amended to place them in better form

Claim 26 is amended to recite "essentially delignified" in place of "the essentially delignified" to provide further antecedent basis to the claim.

### **Claim Objections**

In the Office Action the Examiner objects to claim 5 due to a typographical error. Claim 5 is amended to omit the typographical error.

Claims 2 and 19 are objected to under 37 CFR 1.75(c). Claims 2 and 19 are each amended to depend on claim 1 to overcome the Examiner's objections. Applicant thanks the

Examiner for pointing out these errors.

### **35 U.S.C. § 112 Rejections**

The Examiner rejected claims 1 - 36 under 35 U.S.C. § 112, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The Examiner asserted that claim 1 is allegedly indefinite because of the recitation of *"and to further reduce the size of said particles by causing them to pass through one or a series of screens or gratings"* is unclear. The Examiner asserted that it is allegedly unclear if causing the particles to pass through the screens or gratings is to separate the particles by size or to further break apart the particles to even smaller particles.

Claim 1 has now been amended to recite that the vegetative matter is placed on a screen or grating with openings of a predetermined size (such as 1, 5 and 15 mesh). Pressure is applied on the vegetative matter by high pressure fluid jets causing the vegetative matter to break apart while passing through the screen or grating. The pressure application by the jets on the screen or grating surface causes the vegetative matter to be broken apart into small particles of substantially the size of the predetermined screen or grating opening size. Support for claim 1 as amended appears in the specification at pages 3 and 4, paragraphs 51 and 52: *"... In FIG. 2 are shown three stations 20a, 20b, and 20c. Each of these consists of a box-like construction which supports a strong wire screen 21a, 21b, and 21c near its upper surface and a conveyor belt 28 near the bottom to convey the material that passes through the screen to the next station. The three screens have increasingly smaller, essentially square, openings ranging from 1 to 20 mesh. In a preferred embodiment of the invention, 21a is 1 mesh, 21b is 5 mesh, and 21c is 15 mesh. In other embodiments of the invention, the openings are slits having slit widths corresponding to the dimensions of the square openings, i.e. a grating comprising parallel wires (bars) with a spacing of 1 to 20 bars per inch. Wet raw material from step 1 is placed on the screen 21a. A fluid at high pressure is then caused to impact on the material in order to initially break it up into smaller pieces, increasing its surface area. ... Water sprayed through the nozzles 27 at high pressure impacts upon the material on the screen and breaks it apart into pieces of diameter*

*small enough to pass through the screen. These pieces fall onto the conveyor belt and are transported to station 20b, where they are split into smaller diameter pieces that are transported to station 20c. At 20c they are split again, finally exiting from this stage and entering the next stage of the process.*" and further throughout the specification. Thus, claim 1 is now definite and therefore patentable. Claims 2 - 36 depend, directly or indirectly, from independent claim 1 and incorporate all the elements of claim 1. Therefore, it is respectfully submitted that claims 2 - 36 are patentable, and thus allowable.

The Examiner rejected claims 3, 14, 15, 19 and 31 under 35 U.S.C. § 112, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The Examiner asserted that claims 3, 14, 15, 19 and 31 reciting aligning or orienting the fibers are allegedly indefinite since they lack essential steps indicating how the alignment or orientation of the fibers is performed.

Claims 3 and 19 have now been amended to recite that the alignment of the particles (as recited in claim 3) or fibers (as recited in claim 19) is performed by passing the particles or fibers through a grating of a predetermined slit width, so as to allow a particle or fiber with a diameter of the predetermined slit width to pass therethrough. Thus the particles or fibers that passed through the grating are aligned with their longitudinal axis parallel to the direction of the slits in the grating. Support for claims 3 and 19 as amended appears in the specification at page 5, paragraph 70: "*The spacing between adjacent "bars" of the gratings (i.e. the slit width) is in the range of 20 M to 300  $\mu$ M and is selected to be appropriate for the diameter of the fibers in each of the respective groups. When the fibers fall through the grating they are all aligned with their longitudinal axis parallel to the direction of the slits in the grating. In addition the grating "filters out" any oversized fibers that have somehow passed through the earlier sorting. "* Thus, claims 3 and 19 are now definite and therefore patentable. Claims 14 and 15 depend from claim 3 and incorporate all the elements of claim 3. Claim 31 depends from claim 19 and incorporates all the elements of claim 19. Therefore, it is respectfully submitted that claims 14, 15 and 31 are patentable, and thus allowable.

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The Examiner rejected claims 18, and 20 - 26 under 35 U.S.C. § 112, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The Examiner asserted that claims 18 and 20 - 26 reciting a microorganism is not enabled by the discloser. Claim 18 has been canceled. Accordingly, claims 20 is amended to depend from claim 2. Claim 21 is amended to depend from claim 17. Claim 22 – 26 depend, directly or indirectly from claim 21 and incorporate all the elements of claim 21. Therefore, it is respectfully submitted that claims 20 - 26 are patentable, and thus allowable.

### **35 U.S.C. § 103 Rejections**

In the Office Action, the Examiner rejected claims 1 – 6, 8 -16, 19 and 28 - 36 under 35 U.S.C. § 103(a), as being allegedly unpatentable over Burton{US Patent 2,611,401} (hereinafter the "Burton") and Graybeal et al.{US Patent 2,767,170} (hereinafter the "Graybeal et al.") in view of Richter {US Patent 2,054,301} (hereinafter the "Richter").

Applicant respectfully traverses this rejection in view of the remarks that follow:

Claim 1 as amended recites:

*"A process for producing mechanical pulp from vegetative matter, said process comprising: placing said matter on a screen or grating with openings of a predetermined size; and using high pressure fluid jets to break apart said vegetative matter into small particles, wherein said small particles are of said predetermined size due to application of pressure by said jets on said vegetative matter while causing said vegetative matter to pass through said screen or grating or through a series of screens or gratings, each comprising successively smaller openings than those of the previous screen or grating in said series"*

In contrast, Burton discloses a method for **debarking logs by hydraulic means**. It is well known in the art that debarking a log is an action wherein peeling the external strip of bark from a log is achieved. This is also described by Burton in the specification at column 7, lines 3 - 12: *"In general my method and apparatus have the advantage of using very small quantities of water to accomplish the debarking operation which results in both a saving of water, which is a great advantage in many timber areas, as well as a considerable saving in power. The combined action of the two jets disclosed in my method results in **peeling a spiral strip of bark from the log**".* Figs. 3 - 5 further illustrate the debarking action, shown as peeling the external strip of bark from a log. The method of Burton therefore addresses a method for debarking, i.e., peeling the external strip of bark from a log, a method which has no relation to the subject matter of the present invention, and not a method for producing mechanical pulp from vegetative matter suitable for production of papers and other products, as taught by the present invention.

Therefore, Burton does not teach a method for producing mechanical pulp from vegetative matter by use of fluid jets, rather a method for use of jets for debarking logs. Thus, Burton did not teach, suggest or disclose a method for producing mechanical pulp from vegetative matter.

Regarding US Patent 2,767,170 of Graybeal et al., the Examiner asserted that Graybeal et al. teach a method of use of water jets for breaking up aggregates of fibers and reducing fiber size.

Applicant notes that Graybeal et al. disclose a method for preparing alkali cellulose by suspending cellulose in particulate form in an inert organic slurring medium and contacting the slurry with caustic alkali and water. The method by Graybeal et al. is performed on a slurry of cellulose in particulate form **only after** vegetative matter has been broken apart into particles, as disclosed at column 1, lines 57 - 64 *"While the process in accordance with this invention is broadly applicable for the preparation of alkali cellulose **from any type of chemical cellulose in particulate form**, it is particularly applicable for the preparation of alkali cellulose from those types of fibrous cellulose which have a marked tendency to persist as fiber aggregates in the slurry, such as, for example, shredded, fluffed, or granulated cellulose."* Therefore, the method

of Graybeal et al. does not teach a method for producing mechanical pulp from vegetative matter, rather Graybeal et al. teach a method for preparing alkali cellulose from previously prepared pulp, a method which has no relation to the subject matter of the present invention. Moreover, when Graybeal et al. disclosed use of jets for separating fiber aggregates it is emphasized that forces applied by the jets do not break apart the fibers as disclosed at column 4, lines 3 - 7: *"It is important to note that, although cellulose fiber aggregates are pulled apart and disaggregated and the fibers are rubbed together and moved relative to each other in the liquid attrition zone, there is substantially no breaking up or attrition of the individual cellulose fibers"*. This is in complete contrast with the method of the present invention which discloses use of jets specifically for breaking apart the individual fibers.

Therefore, Graybeal et al. do not teach, suggest or disclose a method for producing mechanical pulp from vegetative matter, rather a method for preparing alkali cellulose from previously prepared fibrous pulp. Moreover, Graybeal et al. actually *teach away from the art*, as one of ordinary skill, wishing to produce mechanical pulp from vegetative matter, which is the objective of the method of the present invention, may erroneously conclude from Graybeal et al. that mechanical pulp can be produced by the method disclosed for separating fiber aggregates while avoiding breaking apart of the fibers and not by breaking apart the vegetative matter into small particles, as taught by the method of the present invention.

Regarding US Patent 2,054,301 of Richter, the Examiner asserted that Richter teaches a method of reducing the size of a batch or a mess of cellulose fibers and separating them by their size through successive screens of progressively finer mesh.

Applicant notes that Richter discloses a method for producing pulverulent cellulose. The method by Richter is performed on parent cellulose materials **only after** vegetative matter has been broken apart into particles, as disclosed at column 1, lines 1 – 7: *"This invention relates to the production of pulverulent cellulose from suitable parent cellulosic materials. It deals more particularly with the production of cellulose powder from comparatively pure forms of cellulose, for instance, those forms that occur pure in nature or that are purified by chemical treatment."*

Therefore, the method of Richter does not teach a method for producing mechanical pulp from vegetative matter rather Richter teaches a method for producing pulverulent cellulose from previously prepared natural or chemical pulp, a method which has no relation to the subject matter of the present invention. Moreover, Richter disclosed use of screens as a step in pulverizing the fibers. This is in complete contrast with the method of the present invention which discloses use of screens with openings of decreasing size for gradually breaking apart the vegetative matter specifically to prevent damaging the fibers, an indispensable requisite for exploiting the fibers for production of papers and other products. This is disclosed at page 4, paragraph 54 of the present application: *"The process described hereinabove i.e. the use of high pressure fluid and screens with openings of decreasing size results in a gradual breaking apart of the plant tissue without damaging the fibers composing the tissue. In the prior art, the processes used for braking up the plant material amounts to essentially grinding or shredding of the tissue, causing extensive random damage to the fibers. In the process of the invention, on the other hand, the plant tissue is separated into small assemblages of cellulose fibers essentially without causing them severe damage"* and at page 3, paragraph 47: *"As is discussed herein, steps 1(optional) and 2 define a complete mechanical process that results in high quality, although not delignified, cellulose pulp suitable for the production of certain types of paper as well as other products."*

Therefore, Richter does not teach, suggest or disclose a method for producing mechanical pulp from vegetative matter, rather a method for producing pulverulent cellulose from previously prepared natural or chemical pulp. Moreover, Richter actually *teaches away from the art*, as one of ordinary skill, wishing to produce mechanical pulp from vegetative matter without damaging the fibers, which is the objective of the method of the present invention, may erroneously conclude from Richter that mechanical pulp can be produced by the method disclosed for pulverizing the fibers and not by gradually breaking apart the vegetative matter into small particles so as to prevent damaging the fibers, as taught by the method of the present invention.

Further, an obviousness rejection requires a teaching or a suggestion by the relied upon prior art of all the elements of a claim (M.P.E.P. §2142). Since Burton, Graybeal et al. and Richter, alone or in combination, do not teach or suggest all the elements of claim 1, the

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Examiner fails to establish a prima facie showing that Burton, Graybeal et al. and Richter, alone or in combination, teach or suggest every feature of claim 1.

Therefore, it is respectfully requested that the rejection of claim 1 under 35 U.S.C. 103§(a) be withdrawn

Claims 2 – 6, 8 -16, 19 and 28 – 36 depend, directly or indirectly, from independent claim 1 and incorporate all the elements of this claim. Therefore, it is respectfully submitted that claims 2 – 6, 8 -16, 19 and 28 – 36 are patentable, and thus allowable.

In the Office Action, the Examiner rejected claims 7, 17, 18 and 20 - 26 under 35 U.S.C. § 103(a), as being allegedly unpatentable over Burton{US Patent 2,611,401} (hereinafter the "Burton"), Graybeal et al.{US Patent 2,767,170} (hereinafter the "Graybeal et al.") and Richter {US Patent 2,054,301} (hereinafter the "Richter") in view of Blanchette et al.{US Patent 5,055,159}.

Applicant respectfully traverses this rejection in view of the remarks that follow:

As described in length above, Burton, Graybeal et al. and Richter, alone or in combination, do not teach or suggest all the elements of claim 1. Claims 7, 17 and 20 – 26, depend, directly or indirectly, from independent claim 1 and incorporate all the elements of this claim. Therefore, it is respectfully submitted that claims 7, 17 and 20 – 26 are patentable, and thus allowable. Claim 18 has been canceled.

In the Office Action, the Examiner rejected claim 27 under 35 U.S.C. § 103(a), as being allegedly unpatentable over Burton{US Patent 2,611,401} (hereinafter the "Burton"), Graybeal et al.{US Patent 2,767,170} (hereinafter the "Graybeal et al.") and Richter {US Patent 2,054,301} (hereinafter the "Richter") in view of Christiansen et al.{US Patent 5,013,404}.

Applicant respectfully traverses this rejection in view of the remarks that follow:

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As described in length above, Burton, Graybeal et al. and Richter, alone or in combination, do not teach or suggest all the elements of claim 1. Claim 27, depends indirectly from independent claim 1 and incorporates all the elements of claim 1. Therefore, it is respectfully submitted that claim 27 is patentable, and thus allowable.

In view of the foregoing amendments and remarks, the pending claims are deemed to be allowable. Their favorable reconsideration and allowance is respectfully requested.

### **CONCLUSION**

In view of the foregoing, Applicant submits that the application is in condition for allowance. Early notice to that effect is earnestly solicited. The Examiner is invited to contact the undersigned attorney if it is believed that such contact will expedite the prosecution of the application.

#### **Petition For Two-Month Extension Of Time Under 37 CFR 1.136(a)**

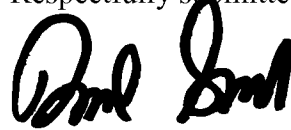
The period for responding to the instant Notice was set to expire on May 8, 2007. Applicant hereby requests that the period for responding to the instant Office Action be extended by two (2) months, so as to expire on July 8, 2007 which, being a Sunday, is extended to Monday, July 9, 2007. Accordingly, this response is being timely filed.

The fee for a Petition for a Two-Month Extension of Time is Two Hundred and Twenty-Five Dollars (\$225.00) dollars for a small entity. The United States Patent and Trademark Office is hereby authorized to charge Deposit Account 501380 in the amount of \$225.00 and any additional fee which is necessary in connection with the filing of this response and petition.

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Favorable action on this response is courteously solicited.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Daniel Swirsky', written in a cursive style.

Daniel J. Swirsky  
Representative for Applicant(s)  
Registration No. 45,148

Dated: July 9, 2007

ALPHAPATENT ASSOCIATES LTD.  
55 REUVEN ST.  
BEIT SHEMESH, ISRAEL 99544  
TEL. (US) 516-620-4573  
FAX. (US) 206-374-6672  
[dswirsky@alphapatent.com](mailto:dswirsky@alphapatent.com)